

IDAHO

FISH & GAME DEPARTMENT

Joseph C. Greenley, Director

FEDERAL AID IN FISH AND WILDLIFE RESTORATION JOB COMPLETION REPORT



LAKE AND RESERVOIR INVESTIGATIONS

Project F-53-R-7 and 8

Job IV-a Lake Pend Oreille Creel Census--1971, 1972 Job

IV-b Clark Fork River Fishery Investigations

March 1, 1971 to February 29, 1972 and
March 1, 1972 to February 28, 1973

by

Richard A. Irizarry Fishery Research Biologist

Boise, Idaho February, 1973

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JOB COMPLETION REPORT
RESEARCH PROJECT SEGMENT

State of Idaho Name: LAKE AND RESERVOIR INVESTIGATIONS
Project No. F-53-R-7 and 8 Title: Lake Pend Oreille Creel Census--
Job No. IV-a 1971, 1972
Period Covered: March 1, 1971 to February 29, 1972 and
March 1, 1972 to February 28, 1973

ABSTRACT:

In 1971, anglers fished an estimated 265,514 hours during 60,139 man-days to catch 602,284 fish. In 1972, anglers fished an estimated 222,908 hours during 50,506 man-days to catch 529,556 fish.

Each year, kokanee comprised 98 percent of the estimated catch; and trout 1 percent.

Hatchery personnel have released 415,964 marked Kamloops rainbow since 1968. To date only 216 of 256,182 adipose-clipped fish have been caught. Returns of other marked Kamloops have been even more negligible.

Between June 24, 1971 and May 29, 1972, project personnel contacted anglers in 1,215 boats on the lake and 932 boats (77 percent) docked at scheduled censused landings. The remaining boats were docked at uncensused landings.

1972, interview data from boat anglers showed that two-thirds of the angling pressure occurred on the south half of the lake.

Submitted by:

Richard A. Irizarry Fishery
Research Biologist

RECOMMENDATIONS:

Continue the creel census on Lake Pend Oreille.

Mark all Kamloops and Dolly Varden (with the exception of fry) planted in the lake or tributary streams.

OBJECTIVES:

To monitor and evaluate trends of major sport fisheries at Lake Pend Oreille.

To evaluate and recommend management procedures.

TECHNIQUES USED:

Creel Census

Creel census methods on Lake Pend Oreille in 1971 and 1972 were modified after evaluation of data gathered during the last three census periods of 1970. The census was intensified from 7 to 20 percent coverage in the number of census days at each of the censused landings. Each landing was censused three Saturdays, three Sundays, and three weekdays instead of the usual one Saturday, one Sunday, and one weekday per 46-day period.

Temporary personnel censused 12 landings each year between January 13 and November 30. The annual census was divided into 21 two-week intervals to separate error due to seasons and provide a seasonal catch comparison. I projected census data by class day for two-week intervals.

Hope and Sunnyside were not censused in 1971 and 1972, respectively. However, I added previous percentage estimates from these landings to the annual data.

Marked Kamloops Rainbow Releases

Hatchery personnel have released 475,747 Kamloops rainbow in Lake Pend

Boat Census

Department personnel interviewed boat anglers fishing Lake Pend Oreille between June 24, 1971 and May 29, 1972 to ascertain the percentage of boat anglers using our census landings.

The lake was divided into four sections for the boat angler interview. Each section was censused one weekend day and one week day every two weeks. We attempted to interview anglers in a minimum of 100 boats at each end of the lake or at least 100 Kamloops boats in Period 6 and 7.

In addition, census personnel recorded the areas fished by interviewed boat anglers in 1972.

FINDINGS:

Kokanee Catch

Sport and Commercial

Field personnel interviewed 29,492 anglers (or 27 percent of the 1971-72 total) leaving the lake at 13 landings.

In 1971, anglers fished an estimated 265,514 hours during 60,139 man-days to catch 602,284 fish between January 13 and November 30 (Table 1). Seventy-seven percent of the anglers sought kokanee which made up 98 percent of the estimated catch; about 23 percent sought trout, which comprised one percent of the estimated catch.

In 1972, anglers fished an estimated 222,908 hours during 50,506 man-days to catch 529,556 fish (Table 2). Seventy-nine percent of the anglers sought kokanee which made up 98 percent of the estimated catch; 29 percent sought trout, which comprised one percent of the estimated catch.

(1951-1972 pressure and catch statistics are summarized in Tables 22 to 28 for reference.)

Table 1. Estimated minimum fishing pressure, effort, and harvest, Lake Pend Oreille, Idaho, 1971.*

Period	Angler Man-days	Hours	Kokanee	Cut- throat	Dolly Varden	Rain- bow	White- fish	Spiney- rays	Other trout	Non- game
Jan. 13-Feb. 27	2,029	9,665	24,497	-	-	-	39	-	-	-
Feb. 28-Apr. 14	2,867	15,537	74,938	-	-	-	18	-	-	-
Apr. 15-May 30	11,513	56,165	145,830	120	417	772	1,598	825	10	861
May 31-July 15	18,830	74,652	167,243	528	321	1,625	491	123	25	267
July 16-Aug. 30	10,402	41,835	68,129	80	51	544	73	252	14	45
Aug. 31-Oct. 15	12,398	56,706	108,092	232	98	1,100	90	1,023	13	14
Oct. 16-Nov. 30	2,100	10,954	1,329	5	80	375	11	83	-	3
Totals	60,139	265,514	590,058	965	967	4,416	2,320	2,306	62	1,190
Percent			97.9	0.2	0.2	0.7	0.4	0.4	0.0	0.2

*Includes only the data expanded from interviews at 12 censused landings and from estimates based on nine-year percentages at one landing (Hope).

Table 2. Estimated minimum fishing pressure, effort, and harvest, Lake Pend Oreille, Idaho, 1972.*

Period	Angler Man-days	Hours	Kokanee	Cut- throat	Dolly Varden	Rain- bow	White- fish	Spiney- rays	Other trout	Non- game
Jan. 13-Feb. 27	664	3,192	23,617	-	-	-	-	-	-	-
Feb. 28-Apr. 14	4,831	23,172	129,054	-	-	-	6	-	-	-
Apr. 15-May 30	8,903	42,602	116,514	47	274	546	1,475	42	9	178
May 31-July 15	10,894	47,027	64,024	488	308	1,034	630	222	2	24
July 16-Aug. 30	12,192	46,572	88,154	262	82	787	150	175	9	47
Aug. 31-Oct. 15	10,536	48,085	98,955	265	135	689	60	-	-	6
Oct. 16-Nov. 30	2,486	12,258	730	52	129	328	47	-	-	-
Totals	50,506	222,908	521,048	1,114	928	3,384	2,368	439	20	255
Percent			98.4	0.2	0.2	0.6	0.4	0.1	0.0	0.1

*Includes only the data expanded from interviews at 12 censused landings and from estimates based on ten-year percentages at one landing (Sunnyside).

Resident Sport Harvest

1971: Resident sport anglers fished 40 percent (23,755) of the estimated angler man-days, harvested 33 percent (196,001) of the estimated catch, and 32 percent (139,377) of the kokanee catch (Table 3).

1972: Resident sport anglers fished 42 percent (21,214) of the estimated angler man-days, harvested 33 percent (177,409) of the estimated catch, and 33 percent (172,952) of the kokanee catch (Table 4).

Nonresident Sport Harvest

1971: Nonresident sport anglers fished 56 percent (33,788) of the estimated angler man-days, harvested 41 percent (246,525) of the estimated catch, and 41 percent (242,383) of the kokanee catch (Table 5).

1972: Nonresident sport anglers fished 53 percent (26,971) of the estimated angler man-days, harvested 36 percent (189,805) of the estimated catch, and 36 percent (186,499) of the kokanee catch (Table 6).

Commercial Harvest

1971: Commercial anglers fished 4 percent (2,596) of the estimated angler man-days, harvested 26 percent (159,758) of the estimated catch, and 27 percent (158,298) of the kokanee catch (Table 7).

1972: Commercial anglers fished 5 percent (2,321) of the estimated angler man-days, harvested 31 percent (162,342) of the estimated catch, and 31 percent (161,597) of the kokanee catch (Table 8).

Catch Rates

1971: Interviewed anglers seeking kokanee fished 54,187 hours to catch 139,379 kokanee and averaged 2.6 fish per hour (Table 9). Kokanee anglers fished an estimated 46,333 man-days or 77 percent of the total man-days.

1972: Interviewed anglers fished 45,898 hours to catch 128,609 kokanee and averaged 2.8 fish per hour (Table 10). Kokanee anglers fished an estimated 40,046 man-days or 79 percent of the total man-days.

Table 3. Resident sport fishing pressure, effort, and harvest, Lake Pend Oreille, Idaho, 1971.

Period	Angler Man-days	Hours	Kokanee	Cut- throat	Dolly Varden	Rain- bow	White- fish	Spiney- rays	Other trout	Non- game
Jan. 13-Feb. 27	1,439	6,652	11,539	-	-	-	18	-	-	-
Feb. 28-Apr. 14	1,621	8,125	20,116	-	-	-	12	-	-	-
Apr. 15-May 30	6,187	29,838	37,472	41	339	505	865	766	3	210
May 31-July 15	7,294	30,226	73,429	197	100	617	276	68	15	235
July 16-Aug. 30	2,209	9,011	12,108	53	8	186	27	170	3	26
Aug. 31-Oct. 15	3,987	18,530	34,272	113	22	731	75	618	2	7
Oct. 16-Nov. 30	1,018	5,371	441	5	27	203	11	67	-	3
Totals	23,755	107,753	189,377	409	496	2,242	1,284	1,689	23	481

Table 4. Resident sport fishing pressure, effort, and harvest, Lake Pend Oreille, Idaho, 1972.

Period	Angler Man-days	Hours	Kokanee	Cut- throat	Dolly Varden	Rain- bow	White- fish	Spiney- rays	Other trout	Non- game
Jan. 13-Feb. 27	268	1,132	4,080	-	-	-	-	-	-	
Feb. 28-Apr. 14	3,464	15,823	60,315	-	-	-	2	-	-	
Apr. 15-May 30	4,692	22,548	26,438	42	200	293	789	30	9	58
May 31-July 15	4,697	20,987	31,182	171	55	422	535	187	-	21
July 16-Aug. 30	2,975	11,759	17,555	164	40	349	12	38	-	35
Aug. 31-Oct. 15	3,742	17,107	32,958	155	49	367	30	-	-	3
Oct. 16-Nov. 30	1,376	6,741	424	52	93	246	10	-	-	-
Totals	21,214	96,097	172,952	584	437	1,677	1,378	255	9	117

Table 5. Nonresident sport fishing pressure, effort, and harvest, Lake Pend Oreille, Idaho, 1971.

Period	Angler Man-days	Hours	Kokanee	Cut- throat	Dolly Varden	Rain- bow	White- fish	Spiney- rays	Other trout	Non- game
Jan. 13-Feb. 27	215	898	994	-	-	-	2	-	-	-
Feb. 28-Apr. 14	468	2,253	6,231	-	-	-	-	-	-	-
Apr. 15-May 30	3,918	17,936	15,088	68	64	228	66	36	7	18
May 31-July 15	11,501	44,174	89,341	330	220	1,007	170	55	10	32
July 16-Aug. 30	8,193	32,824	56,021	27	43	358	46	82	11	19
Aug. 31-Oct. 15	8,411	38,176	73,820	119	76	369	15	405	11	7
Oct. 16-Nov. 30	1,082	5,583	888	-	53	172	-	16	-	-
Totals	33,788	141,844	242,383	544	456	2,134	299	594	39	76

Table 6. Nonresident sport fishing pressure, effort, and harvest, Lake Pend Oreille, Idaho, 1972.

Period	Angler Man-days	Hours	Kokanee	Cut- throat	Dolly Varden	Rain- bow	White- fish	Spiney- rays	Other trout	Non- game
Jan. 13-Feb. 27	73	270	471	-	-	-	-	-	-	-
Feb. 28-Apr. 14	574	2,444	9,516	-	-	-	4	-	-	-
Apr. 15-May 30	3,045	13,643	10,378	5	72	251	90	-	-	-
May 31-July 15	6,158	25,810	29,232	317	253	612	83	34	2	3
July 16-Aug. 30	9,217	34,813	70,599	98	42	438	138	137	9	12
Aug. 31-Oct. 15	6,794	30,978	65,997	110	86	322	30	-	-	3
Oct. 16-Nov. 30	1,110	5,517	306	-	36	82	37	-	-	-
Totals	26,971	113,475	186,499	530	489	1,705	382	171	11	18

Table 7. Commercial fishing pressure, effort, and harvest, Lake Pend Oreille, Idaho, 1971.*

Period	Angler Man-days	Hours	Kokanee	Cut- throat	Dolly Varden	Rain- bow	White- fish	Spiney- rays	Other trout	Non- game
Jan. 13-Feb. 27	375	2,115	11,964	-	-	-	19	-	-	-
Feb. 28-Apr. 14	778	5,159	48,591	-	-	-	6	-	-	-
Apr. 15-May 30	1,408	8,391	93,270	11	14	39	667	23	-	633
May 31	35	252	4,473	1	1	1	45	-	-	-
Totals	2,596	15,917	158,298	12	15	40	737	23	-	633

* Trout, spiny-rays, and nongame fish harvested by commercial anglers using resident sport fishing licenses. Data not included under resident fishing activity because effort in hours was not separated at time of census check.

Table 8. Commercial fishing pressure, effort, and harvest, Lake Pend Oreille, Idaho, 1972.*

Period	Angler Man-days	Hours	Kokanee	Cut- throat	Dolly Varden	Rain- bow	White- fish	Spiny- rays	Other trout	Non- game
Jan. 13-Feb. 27	323	1,790	19,066	-	-	-	-	-	-	-
Feb. 28-Apr. 14	793	4,905	59,223	-	-	-	-	-	-	-
Apr. 15-May 30	1,166	6,411	79,698	-	2	2	596	12	-	120
May 31	39	230	3,610	-	-	-	12	1	-	-
Totals	2,321	13,336	161,597	-	2	2	608	13	-	120

* Trout, Spiny rays, and non-game fish harvested by commercial anglers using resident sport fishing licenses. Data not included under resident fishing activity because effort in hours was not separated at time of census check.

Table 9 Catch data for interviewed anglers (including commercial) seeking kokanee, Lake Pend Oreille, Idaho, 1971.*

Month	Anglers	Hours	Kokanee	Other game fish	Kokanee per hr.	All game fish per hour
January	37	141	405	-	2.9	2.9
February	497	2,393	4,669	10	2.0	2.0
March	459	2,235	8,140	4	3.6	3.6
April	430	2,191	7,562	-	3.5	3.5
May	2,281	9,521	41,410	439	4.4	4.4
June	2,578	9,809	22,966	373	2.3	2.4
July	2,014	7,759	13,499	130	1.7	1.8
August	1,364	5,223	9,990	70	1.9	1.9
September	2,293	10,676	22,258	150	2.1	2.1
October	903	4,221	8,475	43	2.0	2.0
November	8	18	5	-	0.3	0.3
Totals	12,864	54,187	139,379	1,219		
Average (weighted)					2.6	2.6

*Does not include any interview data from the Hope landing.

Table 10. Catch data for interviewed anglers (including commercial) seeking kokanee, Lake Pend Oreille, Idaho, 1972.*

Month	Anglers	Hours	Kokanee	Other game fish	Kokanee per hr.	All game fish per hour
January	20	71	630	-	8.9	8.9
February	221	1,031	6,215	-	6.0	6.0
March	1,135	5,437	33,324	3	6.1	6.1
April	479	1,920	3,854	-	2.0	2.0
May	1,351	5,791	23,039	272	4.0	4.0
June	1,165	4,463	9,418	196	2.1	2.1
July	2,269	8,711	14,878	199	1.7	1.7
August	1,655	6,271	12,226	101	1.9	2.0
September	1,969	8,788	20,192	100	2.3	2.3
October	756	3,412	4,830	24	1.4	1.4
November	2	3	3	-	1.0	1.0
Totals	11,022	45,898	128,609	895		
Average (weighted)					2.8	2.8

*Does not include any interview data from Sunnyside Landing.

Age Composition and Poundage

1971: At intervals, throughout the year, project personnel measured 1,982 angler-caught kokanee to assess age and growth of the fish (Table 11). Length distributions of these fish indicate the range of sizes for each age class and contribution of each year class to the fishery. We measured an additional 300 spawning kokanee on November 18 at Granite Creek. These fish averaged 10.5 inches in length.

The 1971 kokanee harvest consisted of: 1966 age class - 75 percent; 1967 age class - 20 percent; and 1968 age class - 5 percent.

The 1966 year class made up 81 percent (55 tons) of the total 1971 kokanee poundage; the 1967 year class made up 16 percent (11 tons); and the 1968 year class made up 3 percent (2 tons). The contribution from the 1965 year class was very small (Table 12).

1972: Project personnel measured 2,482 kokanee from the catch and 382 from spawning streams (Table 13).

The 1972 kokanee harvest consisted of: 1967 age class - 81 percent; 1968 age class - 14 percent; and 1969 age class - 5 percent.

The 1967 age class made up 87 percent (49 tons) of the total 1972 kokanee poundage; the 1968 year class made up 10 percent (6 tons); and the 1969 year class made up 3 percent (2 tons) (Table 14).

Trout Catch

Kamloops Rainbow

In 1971, sport anglers seeking Kamloops rainbow expended an average of 32.8 hours to catch each fish and 68.6 hours to catch each trophy fish (Table 15). In 1972, they expended 46.5 and 70.6 hours, respectively (Table 16).

During 1971, anglers harvested 4,462 Kamloops rainbow including 892 trophy fish. In 1972, 3,384 Kamloops rainbow including 880 trophy fish were caught.

Measured Kamloops (2,251) ranged between 5.5 and 37 inches with an average length of 15.3 inches. Trophy Kamloops (17 inches and over) averaged 26.9 inches.

Table 11. Length frequency distribution of 1,982 kokanee from the catch and 300 kokanee from the spawning populations, Lake Pend Oreille, Idaho, 1971.

Total Length (mm)	1971 Creel census							1971 spawners	
	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Males	Females
160-4		4*							
165-9		1	3						
170-4		3	1	1					
175-9				2	1	1			
180-4				3	6	1			
185-9					15				
190-4				2	9	2			
195-9	1	1		2	5	4			
200-4	1	3		5	3	3			
205-9	6	9	1	8	2	1			
210-4	14	30	7	13	9	1	1		
215-9	21	42	19	52	17		2		
220-4	32	39	21	54	14		1		
225-9	75	46	32	56	14		1		
230-4	71	60	63	107	33	4			
235-9	45	33	65	135	44	6	2		
240-4	16	19	54	89	54	9	1		3
245-9	11	7	29	44	35	9	4	1	8
250-4	3	2	5	21	25	17	4	2	22
255-9	1			5	8	16	19	9	34
260-4	1			1	2	11	18	20	30
265-9	1	1			3	5	22	27	29
270-4						3	4	28	18
275-9					1	3	2	34	3
280-4							3	21	2
285-9	1					1		5	
290-4						1		3	
295-9									1

*Includes one kokanee 157mm in length under Group 160-4 in period 2.

Table 12. Estimated minimum catch and poundage of kokanee by year class, Lake Pend Oreille, Idaho, 1971.*

1971 Period	Estimated number of kokanee caught**	Year class in the catch								
		1966			1967			1968		
		Percent	Number	Pounds	Percent	Number	Pounds	Percent	Number	Pounds
Jan. 13 -										
Feb. 27	24,672	92	22,698	4,994	7	1,727	294	-	-	-
Feb. 28 -										
Apr. 14	75,282	69	51,949	11,429	28	21,081	3,584	3	2,259	158
Apr. 15 -										
May 30	145,608	90	131,047	30,141	9	13,105	2,359	1	1,456	116
May 31 -										
July 15	167,002	69	115,231	28,808	28	46,761	8,885	3	5,010	651
July 16 -										
August 30	68,145	69	47,020	11,755	18	12,266	2,331	13	8,859	1,063
Aug. 31 -										
Oct. 15	108,013	67	72,369	21,711	20	21,603	5,401	13	14,041	1,825
Oct. 16 -										
Nov. 30	1,329	82	1,090	371	18	239	57	-	-	-
Total Number	590,058		441,404			116,782			31,625	
Total pounds				109,207			22,909			3,814
Percent of total number (weighted)			75			20			5	

* Includes only the data expanded from interviews at 12 censused landings and from estimates based on 9-year percentages at 1 landing (Hope).

** The 1965 year class returned 247 kokanee (1 percent) or 86.45 pounds to the creel during Period 1 and contributed .04 percent of the total kokanee catch.

Table 13. Length frequency distribution of 2,482 kokanee from the catch and 382 kokanee from the spawning populations, Lake Pend Oreille, Idaho, 1972.

Length Group (MM)	1972 Creel Census						1972 Spawners	
	Period	Period	Period	Period	Period	Period	Males	Females
	1	2	3	4	5	6		
140-4		1						
145-9								
150-4								
155-9	1	2						
160-4	1	5						
165-9	2	4	1					
170-4	6	5		1				
175-9	2	3	3	9				
180-4		3		15	2	1		
185-9	1	4		21	7			
190-4	10	4		14	14			
195-9	26	22	1	18	34			
200-4	36	43	11	37	26	3		
205-9	24	52	8	40	23	4		
210-4	36	34	13	35	36	6		
215-9	27	21	9	44	53	4		1
220-4	28	32	25	28	32	9		1
225-9	36	25	62	62	24	1		
230-4	26	17	60	95	34	4		1
235-9	22	11	58	84	55	6		8
240-4	12	5	41	61	77	29	1	14
245-9	3	4	20	25	69	47	20	18
250-4		2	10	9	63	69	21	41
255-9	1		2	2	33	63	35	29
260-4			1		12	59	48	31
265-9					6	31	39	24
270-4						12	23	8
275-9		1				9	12	4
280-4							2	
285-9							1	

Table 14. Estimated minimum catch and poundage of kokanee by year class, Lake Pend Oreille, Idaho, 1972.

1972 Period	Estimated number of kokanee caught	Year class in the catch								
		1967			1968			1969		
		Percent	Number	Pounds	Percent	Number	Pounds	Percent	Number	Pounds
Jan. 13 - Feb. 27	23,617	96	22,672	4,081	4	945	76	-	-	-
Feb. 28 - Apr. 14	129,054	93	120,020	24,004	7	9,034	632	-	-	-
Apr. 15 - May 30	116,514	89	103,698	21,777	10	11,652	1,864	1	1,164	105
May 31 - July 15	64,024	56	35,854	8,246	34	21,768	3,483	10	6,402	768
July 16 - Aug. 30	88,154	58	51,129	13,294	24	21,157	4,020	18	15,868	2,222
Aug. 31 - Oct. 15	98,955	92	91,039	27,312	7	6,927	1,316	1	989	138
Oct. 16 - Nov. 30	730	92	672	202	7	51	10	1	7	-
Total Number	521,048		425,084			71,534			24,430	
Total pounds			98,916			11,401			3,233	
Percent of total number (weighted)			82			14			4	

Table 15. Catch data for interviewed anglers seeking Kamloops rainbow trout, Lake Pend Oreille, Idaho, 1971.*

Month	Anglers	Hours	Kamloops rainbow	Other trout	Other game fish	Kamloops rainbow per hour	All trout per hour	All game fish per hour
May	1,409	7,596	188	51	25	0.02	0.03	0.03
June	406	2,012	76	29	27	0.04	0.05	0.07
July	247	1,060	26	5	16	0.02	0.03	0.04
August	207	826	21	12	5	0.03	0.04	0.05
September	250	1,091	70	16	12	0.06	0.08	0.09
October	541	2,510	76	20	22	0.03	0.04	0.05
November	295	1,578	51	12	-	0.03	0.04	0.04
Totals	3,355	16,673	508**	145	107			
Average (weighted)						0.03	0.04	0.05

*Does not include any interview data from the Hope census landing.

**Includes 236 trophy Kamloops rainbow caught in 16,179 hours.

Table 16. Catch data for interviewed anglers seeking Kamloops Rainbow Trout, Lake Pend Oreille, Idaho, 1972*

Month	Anglers	Hours	Kamloops Rainbow	Other Trout	Other game fish	Kamloops Rainbow per hour	All trout per hour	All game fish per hour
April	446	2,651	22	6	-	0.01	0.01	0.01
May	851	4,310	87	21	3	0.02	0.03	0.03
June	372	1,883	62	16	24	0.03	0.04	0.05
July	493	2,091	56	10	8	0.03	0.03	0.04
August	203	804	31	10	-	0.04	0.05	0.05
September	139	638	18	16	2	0.03	0.05	0.06
October	527	2,640	44	25	3	0.02	0.03	0.03
November	384	2,083	48	15	-	0.02	0.03	0.03
Totals	3,415	17,100	368**	119	40			
Average (weighted)						0.02	0.03	0.03

* Does not include any interview data from the Sunnyside Landing.

** Includes 234 trophy Kamloops Rainbow caught in 16,566 hours.

Marked Kamloops

Hatchery personnel have released 475,747 Kamloops rainbow in Lake Pend Oreille and its tributaries since 1968 of which 87 percent have been marked (Table 17). To date only 216 of 256,182 adipose-clipped fish have been caught. This is only one of every 1,200 released. Returns of other marked fish have been even less negligible.

Since 1969, census personnel have observed 52 fin-clipped Kamloops. These fish ranged between 8 and 17 3/4 inches and averaged 11.9 inches in length. Only one of 486 trophy Kamloops observed by census personnel during the past two years was clipped.

Anglers seeking other species caught 73 percent of the clipped returnees indicating light pressure on the smaller rainbow. In 1972, only 4 percent of the interviewed Kamloops anglers sought small rainbow.

Low returns of marked Kamloops suggest either poor survival or lack of angler pressure. At present, the main contributing factor is not known. Other Trout

Anglers seeking trout expended 16.3 hours per fish in 1971 (Table 18) and 20.1 hours per fish in 1972 (Table 19). In 1971, anglers harvested an estimated 967 Dolly Varden (including 532 trophy fish); 965 cutthroat trout; and 29 German brown trout. In 1972, 928 Dolly Varden (including 504 trophy fish); 1,114 cutthroat trout, and 10 brown trout were caught.

Dolly Varden measurements (491) for two years ranged between 6 and 33.5 inches with an average length of 18.2 inches. Measurements from 265 trophy Dolly Varden (17 inches and over) averaged 21.9 inches.

Five hundred and eighty-six cutthroat measured between 7 and 18 inches with an average length of 11.9 inches.

Twelve brown trout ranged between 13 and 33 inches and averaged 20.2 inches in length. Seven fish were trophy-size. All brown trout observed in the creel were incidental to the catch of anglers seeking other species.

Table 17. Returns of marked Kamloops rainbow to the creel, Lake Pend Oreille, Idaho, 1968-1972.

Year	Number Clipped			Total Clipped	Percent Clipped	Estimated Number Returned	
	AD Only	AD - RV	AD - LV			AD Only	AD - RV
1968	141,752	-	-	141,752	98	-	-
1969	100,530	-	-	100,530	84	51	-
1970	13,390	71,230	-	84,620	95	14	-
1971	510	19,050	13,265	32,825	49	128	2
1972	-	38,286	17,951	56,237	100	23	-
	256,182	128,566	31,216	415,964	87	216	2

Table 18. Catch data for interviewed anglers seeking trout, all species combined,
Lake Pend Oreille, Idaho, 1971.*

Month	Anglers	Hours	Trout	Other game fish	Trout per hour	All game fish per hour
May	1,522	8,093	346	50	0.04	0.05
June	500	2,460	310	190	0.13	0.20
July	284	1,167	45	16	0.04	0.05
August	227	887	50	9	0.06	0.07
September	275	1,181	137	41	0.12	0.15
October	582	2,666	167	44	0.06	0.08
November	296	1,580	52	-	0.03	0.03
Totals	3,686	18,034	1,107	350		
Average (weighted)					0.06	0.08

*Does not include any interview data from the Hope landing.

Table 19. Catch data for interviewed anglers seeking trout, all species combined, Lake Pend Oreille, Idaho, 1972*.

Month	Anglers	Hours	Trout	Other Game Fish	Trout Per Hour	All Game Fish Per Hour
April	576	3,344	73	3	0.02	0.02
May	937	4,683	173	9	0.04	0.04
June	420	2,076	163	109	0.08	0.13
July	568	2,394	189	86	0.08	0.11
August	245	931	85	25	0.09	0.12
September	165	754	85	33	0.11	0.16
October	564	2,772	130	4	0.05	0.05
November	386	2,087	49	0	0.02	0.02
Totals	3,861	19,041	947	269		
Average (Weighted)					0.05	0.06

* Does not include any interview data from the Sunnyside landing.

Boat Census

Department personnel conducted a boat angler interview between June 24, 1971 and May 29, 1972. The lake was divided into four sections (Figure 1). Anglers were contacted while fishing between 10 am and 2 pm. During fair weather, it took one hour and 10 minutes to complete the circuit of any one of the sections. However, days were missed due to poor weather, but an attempt was made to census two sections in a single day when the weather permitted and the fishing pressure light.

Anglers in 1,215 boats were contacted of which 932 boats or 77 percent returned through our census landings (Table 20). The other 283 returned to other landings: resorts (10 percent), private homes (8 percent), and public access sites (5 percent).

Boat Distribution

During the boat census, project personnel recorded areas of boat concentrations (Figure 1).

In 1972, census personnel recorded the areas fished by interviewed boat anglers (Table 21).

In evaluating this data, I found that anglers in 98 percent of the boats leaving the lake through south end landings travelled little and preferred fishing the lower half of the lake. Census personnel recorded no anglers from the Bayview area fishing Section 1. Only during Periods 3 and 7, do Bayview and Farragut anglers increase their travels. Mainly to take advantage of the Kamloops fishery near the Green Monarchs in Section 2 and Whiskey Rock in Section 3.

Anglers in 59 percent of the boats leaving the lake through north end landings fished in Section 2. Significantly, anglers in 26 percent of the north end boats fished Section 3 and 4. Mainly Kamloops and cutthroat anglers.

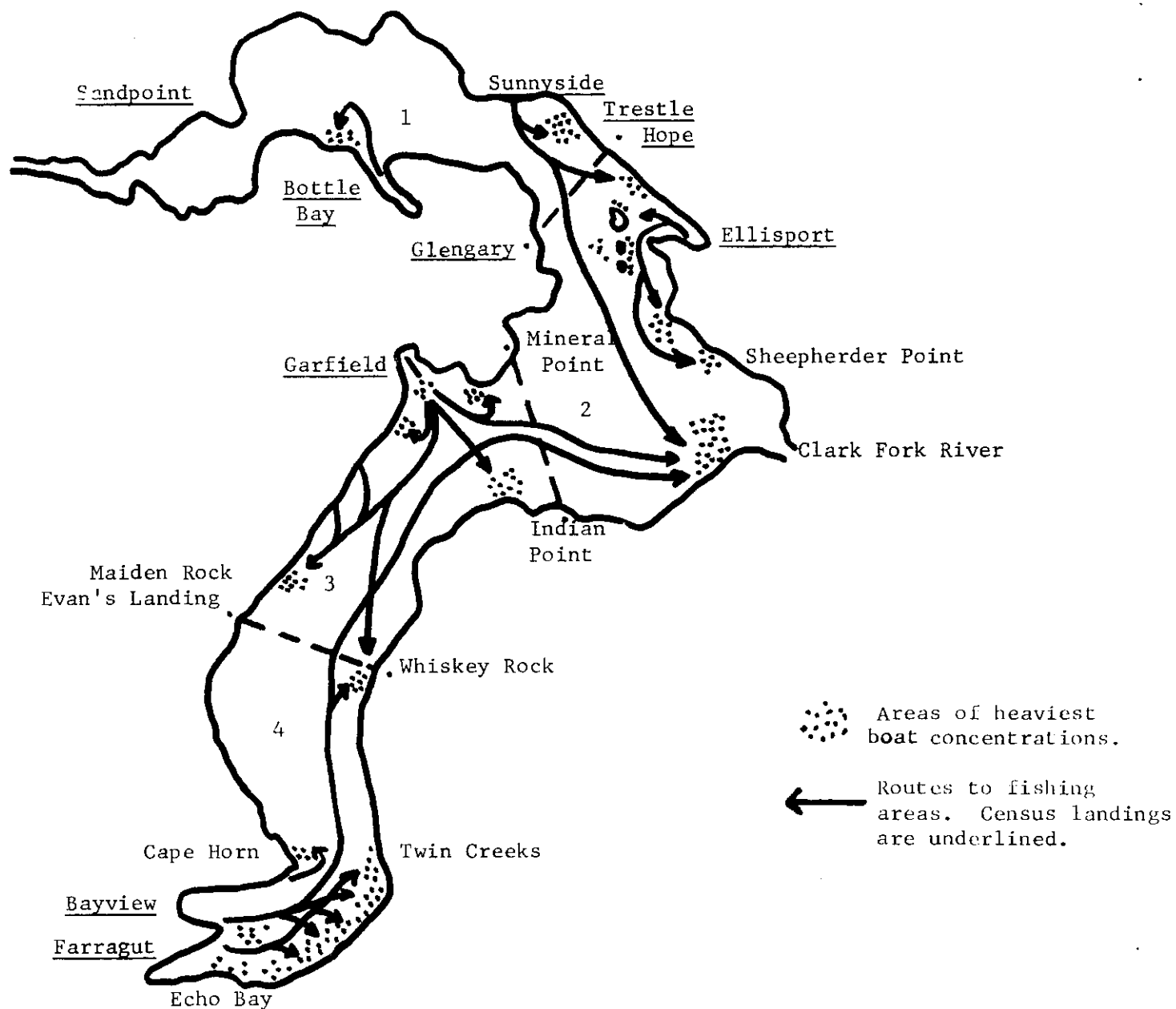


Figure 1. Pend Oreille Lake, Idaho, showing primary fishing areas, landings and routes of boat travel.

Table 20. Interviewed boat anglers using censused landings, Lake Pend Oreille, Idaho, June 24, 1971 - May 29, 1972.

Number Using Censused Landings	Apr. 15- May 30	Mar. 31- July 15	July 16- Aug. 30	Aug. 31- Oct. 15	Oct. 16- Nov. 30	Total (%)
South End	125	72	72	59	7	335 (28%)
North End	<u>101</u>	<u>191</u>	<u>189</u>	<u>49</u>	<u>67</u>	<u>597</u> (49%)
Subtotal	226	263	261	108	74	932
Number Using Uncensused Landings	Apr. 15- May 30	Mar. 31- July 15	July 16- Aug. 30	Aug. 31- Oct. 15	Oct. 16- Nov. 30	Total (%)
Resorts	3	30	82	4	1	120 (10%)
Public Access	1	18	28	14	2	63 (5%)
Private Homes	<u>11</u>	<u>40</u>	<u>30</u>	<u>16</u>	<u>3</u>	<u>100</u> (8%)
Subtotal	15	88	140	34	6	283
Total	241	351	401	142	80	1,215 (100%)

* Only period censused in 1972; all others in 1971.

Table 21. Angler boat distribution by section, Lake Pend Oreille, Idaho,
January 13 to November 30, 1972.

South End					
Period	Section 1	Section 2	Section 3	Section 4	Total
Jan. 13 - Feb. 27	-	-	-	233	233
Feb. 28 - Apr. 14	-	-	-	571	571
Apr. 15 - May 30	-	23	49	342	414
May 31 - July 15	-	7	30	721	758
July 16 - Aug. 30	-	6	21	697	724
Aug. 31 - Oct. 15	-	7	33	1,027	1,067
Oct. 16 - Nov. 30	-	<u>24</u>	<u>55</u>	<u>151</u>	<u>230</u>
Subtotal		67	188	3,742	3,997
Percent		2	5	93	

North End					
Period	Section 1	Section 2	Section 3	Section 4	Total
Jan. 13 - Feb. 27		No Census			
Feb. 28 - Apr. 14		No Census			
Apr. 15 - May 30	76	541	237	6	860
May 31 - July 15	115	255	184	6	560
July 16 - Aug. 30	208	568	138	1	915
Aug. 31 - Oct. 15	45	268	122	1	436
Oct. 16 - Nov. 30	<u>8</u>	<u>118</u>	<u>73</u>	<u>2</u>	<u>201</u>
Subtotal	452	1,750	754	16	2,972
Percent	15	59	25	1	

Total	452	1,817	942	3,758	6,969
Percent	6	26	14	54	

Table 22. Estimated minimum number of angler man-days Lake Pend Oreille, Idaho, by license class, 1951-present.

Year	Total Anglers	Resident Anglers	Nonresident Anglers	Commercial
1951	60,172	---	---	---
1952	57,814	26,836	30,051	927
1953	99,855	47,786	44,877	7,192
1954	90,566	40,956	41,619	7,991
1955	67,645	31,386	32,257	4,002
1956	87,813	45,432	38,006	4,375
1957	72,355	35,207	34,229	2,919
1958	88,453	45,532	36,862	6,059
1959	75,057	36,671	34,914	3,472
1960	77,162	35,564	36,385	5,213
1961	81,387	33,648	42,453	5,286
1962	59,379	23,656	31,348	4,375
1963	72,221	31,788	35,805	4,628
1964	66,225	26,703	35,295	4,227
1965	58,263	27,440	26,256	4,567
1966	65,340	24,710	37,976	2,654
1967	54,699	20,564	31,559	2,576
1968	55,414	18,379	35,492	1,543
1969	45,025	17,549	26,606	870
1970	61,815	21,944	37,715	2,156
1971	60,137	23,751	33,790	2,596
1972	50,506	21,214	26,971	2,321

Table 23. Estimated total catch of kokanee by license class, Lake Pend Oreille, Idaho, 1951-present.

Year	All Anglers	Resident Anglers	Nonresident Anglers	Commercial Anglers
1951	820,486	---	---	170,500
1952	514,913	183,657	268,116	63,140
1953	1,335,881	412,288	382,593	541,000
1954	1,232,916	326,568	362,844	543,504
1955	650,375	181,492	228,610	240,273
1956	1,092,651	423,092	240,294	429,265
1957	751,113	256,280	277,699	217,134
1958	1,197,076	365,082	359,132	473,212
1959	1,261,943	377,095	432,001	452,847
1960	1,038,200	319,041	278,571	440,588
1961	991,595	257,362	305,001	429,232
1962	650,960	168,847	190,039	292,074
1963	1,049,339	359,677	314,291	375,371
1964	1,148,197	325,223	452,962	370,012
1965	1,003,132	380,847	319,034	303,251
1966	807,169	220,267	349,869	237,033
1967	898,748	218,629	289,877	390,242
1968	593,704	204,972	288,454	100,278
1969	494,358	189,794	242,211	62,353
1970	661,940	173,672	367,981	120,287
1971	590,058	189,377	242,383	158,298
1972	521,048	172,952	186,499	161,597

Table 24. (Part 1) Lake Pend Oreille kokanee catch by month, 1951 - 1958.

YEAR	KOKANEE CATCH BY MONTH											TOTAL CATCH
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	
1951		315,852		27,781	50,508	183,882	88,248	43,706	84,234	26,275		820,486
1952				14,379	126,979	107,521	79,405	39,056	66,172	81,401		514,913
1953		50,466	255,549	203,791	190,203	234,300	140,141	56,206	95,779	107,144	2,302	1,335,881
1954		8,963	96,637	180,081	358,689	203,896	192,094	50,018	93,946	46,806	1,786	1,232,916
1955		24	23,762	61,515	200,674	99,188	23,388	67,792	136,641	37,383	8	650,375
1956	433	3,359	212,597	299,637	226,911	64,036	66,619	55,985	142,753	20,289	32	1,092,651
1957		39,885	85,926	129,715	102,188	38,454	42,147	88,447	196,838	27,499	14	751,113
1958	26,400	105,974	81,481	200,611	227,203	42,356	101,736	117,508	223,693	70,459	5	1,197,426

Table 24. (Part 2). Lake Pend Oreille kokanee catch by period, 1959 - present.

YEAR	KOKANEE CATCH BY PERIOD							TOTAL CATCH
	JAN 13- FEB 27	FEB 28- APR 14	APR 15- MAY 30	MAY 31- JULY 15	JULY 16- AUG 30	AUG 31- OCT 15	OCT 16- NOV 30	
1959	---	233,599	380,173	270,127	113,144	158,622	6,248	1,161,913
1960	19,042	287,126	307,945	131,586	72,112	201,303	20,086	1,039,200
1961	77	239,822	347,946	98,447	41,587	260,326	3,750	991,955
1962	24,005	117,808	240,200	79,608	72,440	103,005	13,894	650,960
1963	212,175	130,142	261,372	55,511	150,634	221,355	18,150	1,049,339
1964	90,162	160,011	293,894	196,037	145,106	273,720	3,695	1,162,625
1965	120,193	287,280	157,907	147,746	36,761	254,740	2,665	1,007,292
1966	72,766	146,076	170,690	95,038	139,628	178,218	6,328	808,744
1967	125,435	62,274	107,762	169,990	73,220	165,761	5,870	710,312
1968	126,179	4,968	99,692	136,559	114,754	136,235	18	618,405
1969	9,266	10,378	124,940	92,529	105,186	135,507	5,486	483,292
1970	50,050	65,378	50,296	190,340	157,069	141,132	583	654,848
1971	24,497	74,938	145,830	167,243	68,129	108,092	1,329	590,058
1972	23,617	129,054	116,514	64,024	88,154	98,955	730	521,048

Table 25. Catch per hour by month for interviewed anglers (including commercial) seeking kokanee, Lake Pend Oreille, Idaho, 1962-1971.

Year	Monthly Catch Per Hour for Kokanee											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Ave.
1962	-	5.2	2.5	4.8	4.9	1.4	1.2	1.5	1.7	3.7	.0	2.6
1963	-	11.4	3.6	2.6	4.3	1.4	2.1	2.5	2.5	4.0	.2	3.3
1964	3.5	7.3	6.4	4.4	8.6	3.0	1.8	3.1	4.1	3.2	3.7	4.5
1965	6.2	6.7	8.0	2.3	5.4	3.1	1.9	2.2	3.4	3.6	.0	4.2
1966	11.6	7.1	4.4	0.4	4.8	1.9	1.6	2.6	2.7	2.6	-	3.1
1967	9.5	7.8	3.8	1.3	5.6	2.4	2.0	2.3	3.2	3.8	.0	3.5
1968	13.3	6.4	0.1	3.7	3.9	2.8	1.7	2.4	2.7	2.4	-	2.9
1969	6.7	2.7	1.7	1.0	6.9	2.0	2.6	2.7	3.3	2.0	0.5	3.5
1970	0.7	3.9	6.2	0.8	3.1	2.4	2.7	3.0	2.9	2.4	0.0	2.9
1971	2.9	1.9	3.6	3.4	4.3	2.3	1.7	1.9	2.1	2.	0.3	2.6
1972	8.9	6.0	6.1	2.01	4.0	2.1	1.7	2.0	2.3	1.4	1.0	2.8

Table 26. Kokanee size at spawning time, Lake Pend Oreille, Idaho, 1950-present.

Year	Average Size of Spawners (Inches)
1950	10.9
1951	11.2
1952	12.0
1953	11.9
1954	9.9
1955	-
1956	9.8
1957	-
1958	10.5
1959	10.7
1960	11.2
1961	11.2
1962	11.0
1963	10.7
1964	9.9
1965	10.3
1966	10.4
1967	10.2
1968	-
1969	10.2
1970	10.5
1971	10.5
1972	10.2

Table 27. Relationship between kokanee catch and drawdown after November 15, Lake Pend Oreille, Idaho, 1951-present.

YEAR	CATCH	DRAWDOWN (FT)	CATCH (+5 YRS)
1951	820,000	---	1,093,000
1952	515,000	<u>7.2</u>	751,000
1953	1,336,000	1.4	1,197,000
1954	1,240,000	<u>9.5</u> *	1,162,000
1955	650,000	3.8	1,039,000
1956	1,093,000	2.4	992,000
1957	751,000	<u>5.1</u>	651,000
1958	1,197,000	2.9	1,049,000
1959	1,162,000	2.5	1,163,000
1960	1,039,000	3.0	1,007,000
1961	992,000	5.6	809,000
1962	651,000	3.4	710,000
1963	1,049,000	<u>4.0</u>	618,000
1964	1,163,000	<u>5.4</u>	483,000
1965	1,007,000	3.7	655,000
1966	809,000	<u>5.6</u>	590,000
1967	710,000	2.0	521,000
1968	618,000	<u>4.0</u>	
1969	483,000	0.4	
1970	655,000	1.4	
1971	590,000	2.3	
1972	521,000	**	

* Indicates year when no relationship is shown between drawdown and catch.

** Information unavailable at this time.

Table 28, Estimated minimum catch of kokanee, Kamloops, Dolly Varden, and Cutthroat Trout, Lake Pend Oreille, Idaho, 1951-present.

YEAR	KOKANEE	KAMLOOPS	TROPHY KAMLOOPS	DOLLY VARDEN	TROPHY DOLLY VARDEN	CUTTHROAT
1951	820,486	678		1,775		5,271
1952	514,913	535		2,393		5,850
1953	1,335,881	3,158		5,035		8,201
1954	1,232,916	2,533		3,660		5,322
1955	650,375	2,594		3,811		4,982
1956	1,092,651	3,251		3,288		5,343
1957	751,113	2,938		2,117		5,138
1958	1,197,426	5,286		1,348		5,881
1959	1,161,913	4,906		1,677		3,659
1960	1,039,200	9,626	1,380	2,616	1,491	3,730
1961	991,955	5,355	873	996	568	2,641
1962	650,960	6,556	1,136	1,434	817	2,615
1963	1,049,339	10,323	1,442	1,049	671	3,069
1964	1,162,625	4,942	870	929	502	1,757
1965	1,007,292	4,763	1,141	1,460	672	1,744
1966	808,744	4,978	1,040	1,199	740	2,040
1967	710,312	3,349	767	657	512	788
1968	618,405	4,169	832	624	387	782
1969	483,292	3,297	889	862	588	954
1970	654,848	4,419	1,105	640	493	1,256
1971	590,058	4,462	892	967	532	965
1972	521,048	3,384	880	928	504	1,114

JOB COMPLETION REPORT
RESEARCH PROJECT STATEMENT

State of Idaho Name: LAKE AND RESERVOIR INVESTIGATIONS
Project No. F-53-R-7 and 8 Title: Clark Fork River Fishery
Job No. IV-b Investigations
Period Covered: March 1, 1971 to February 29, 1972 and
March 1, 1972 to February 28, 1973

ABSTRACT:

Each year during the spring (May) and fall (October and November) anglers fish the lower Clark Fork River for "trophy" species (17 inches or larger) of Kamloops rainbow and Dolly Varden char. Since 1966, an annual creel census has assessed the magnitude of this fishery. In 1971, anglers fishing the Clark Fork River caught an estimated 40 trophy Kamloops and 74 trophy Dolly Varden. In 1972, 147 trophy Kamloops and 141 trophy Dolly Varden were caught.

Seven years of trend data indicated a decline in the Kamloops catches from the Clark Fork River. Lake returns of Kamloops, although erratic, have remained stable.

Submitted by:

Richard A. Irizarry Fishery
Research Biologist

RECOMMENDATIONS:

The creel census and its evaluation should continue on the Clark Fork River.

OBJECTIVES:

To monitor and evaluate trends of major sport fisheries at Lake Pend Oreille. To evaluate and recommend management practices.

TECHNIQUES USED:

During 1971 and 1972, I used a random stratified creel census on the Clark Fork River to estimate the total catch of trophy Kamloops and Dolly Varden.

Department personnel interviewed anglers at a check station near the town of Clark Fork. They operated the station one weekday and one weekend day per week during the fishery in 1971. I added one weekday per week to the 1972 census.

Census personnel also obtained creel information at the end of the day from anglers camping at the Johnson Creek access area.

FINDINGS:

Trophy Trout Catch - 1971

Department personnel interviewed 236 anglers who fished 1,511 hours to catch 14 trophy Kamloops and 35 trophy Dolly Varden (Table 1).

Anglers fished an estimated 3,678 hours during 596 man-days to catch 40 trophy Kamloops and 74 trophy Dolly Varden (Table 2).

Residents comprised 61 percent of the anglers. They expended 61 percent of the effort to catch 55 percent of the combined trophy fish harvest. Non-residents

comprised 39 percent of the anglers. They expended 39 percent of the effort to catch 45 percent of the combined trophy fish harvest. Trophy

Trout Catch - 1972

Department personnel interviewed 374 anglers who fished 1,940 hours to catch 37 trophy Kamloops and 41 trophy Dolly Varden (Table 3).

Anglers fished an estimated 4,771 hours during 872 man-days to catch 147 trophy Kamloops and 141 trophy Dolly Varden (Table 4).

Residents comprised 61 percent of the anglers. They expended 63 percent of the effort to catch 50 percent of the combined trophy fish harvest.

Non-residents comprised 39 percent of the anglers. They expended 37 percent of the effort to catch 50 percent of the combined trophy fish harvest.

River vs. Lake Trophy Fishery - 1971

Interviewed anglers averaged 107.9 hours per trophy Kamloops caught and 43.2 hours per Dolly Varden on the Clark Fork River. On Lake Pend Oreille, anglers averaged 97 hours fished per trophy Kamloops caught and 12.9 hours per trophy Dolly Varden for similar time periods (5/1-5/4; 10/4-11/7).

Anglers fishing the river averaged 6.4 hours per day while those on the lake fished 5.7 hours.

Clark Fork River anglers caught an estimated 40 trophy Kamloops and 74 trophy Dolly Varden. In comparison, anglers on Lake Pend Oreille caught an estimated 892 trophy Kamloops and 532 trophy Dolly Varden.

River vs. Lake Trophy Fishery - 1972

Interviewed anglers on the river averaged 52.4 hours per trophy Kamloops caught and 47.3 hours per Dolly Varden. Anglers on the lake averaged 89.5 hours per trophy Kamloops caught and 24.4 hours per trophy Dolly Varden for similar time periods (4/29-5/7; 9/30-11/30).

River anglers fished an average of 5.2 hours per day while lake anglers averaged 5.5 hours.

Clark Fork River anglers caught an estimated 147 trophy Kamloops and 141 trophy Dolly Varden. Lake Pend Oreille anglers caught an estimated 147 trophy Kamloops and 141 trophy Dolly Varden. Lake Pend Oreille anglers caught an estimated 880 trophy Kamloops and 504 trophy Dolly Varden.

Catch rates for anglers seeking Kamloops on the lake have remained relatively stable since 1960 while the river fishery rates have deteriorated since 1966 (Table 5).

Table 1. Catch data for interviewed anglers seeking "trophy" fish species, Clark Fork River, Idaho, 1971.

Fishery	License Type	No. Anglers	Hrs. Fished	Fish Caught	
				Kamloops	Dolly Varden
Spring	Resident	80	650	3	21
	Nonresident	43	262	0	10
	Subtotal	123	912	3	31
Fall	Resident	72	355	5	2
	Nonresident	41	244	6	2
	Subtotal	113	599	11	4
	Total	236	1,511	14	35

Table 2. Estimated minimum number of angler man-days, hours fished, and catch of "trophy" fish species, Clark Fork River, Idaho, 1971.

Fishery	License Type	Angler Man-days	Hrs. Fished	Fish Caught	
				Kamloops	Dolly Varden
Spring	Resident	160	1,300	6	42
	Nonresident	86	524	0	20
	Subtotal	246	1,824	6	62
Fall	Resident	203	955	10	5
	Nonresident	147	899	24	7
	Subtotal	350	1,854	34	12
	Total	596	3,678	40	74

Table 3. Catch data for interviewed anglers seeking "trophy" fish species, Clark Fork River, Idaho, 1972.

Fishery	License Type	No. Anglers	Hrs. Fished	Fish Caught	
				Kamloops	Dolly Varden
Spring	Resident	104	514	7	20
	Nonresident	38	209	0	9
	Subtotal	142	723	7	29
Fall	Resident	139	722	9	6
	Nonresident	93	495	21	6
	Subtotal	232	1,217	30	12
	Total	374	1,940	37	41

Table 4. Estimated minimum number of angler man-days, hours fished, and catch of "trophy" fish species, Clark Fork River, Idaho, 1972.

Fishery	License Type	Angler Man-days	Hrs. Fished	Fish Caught	
				Kamloops	Dolly Varden
Spring	Resident	219	1,069	15	42
	Nonresident	82	438	0	18
	Subtotal	301	1,507	15	60
Fall	Resident	317	1,935	38	48
	Nonresident	254	1,329	94	33
	Subtotal	571	3,264	132	81
	Total	872	4,771	147	141

Table 5. Catch data for interviewed anglers seeking Kamloops at Lake Pend Oreille and its tributary the Clark Fork River, 1960 to present.*

	Lake Pend Oreille			Clark Fork River		
	Hours	Kamloops	Hours/ Fish	Hours	Kamloops	Hours/ Fish
1960	4,567	76	60.1		NO CENSUS	
1961	4,066	64	63.5		NO CENSUS	
1962	3,357	77	43.6		NO CENSUS	
1963	4,831	65	74.3		NO CENSUS	
1964	4,459	68	65.6		NO CENSUS	
1965	3,849	81	47.5		NO CENSUS	
1966	4,263	88	48.4	666	59	11.3
1967	4,219	66	63.9	1,519	71	21.4
1968	3,533	58	60.9	2,093	63	33.2
1969	4,106	68	60.4	1,945	48	40.5
1970	5,996	83	72.2	1,975	44	44.9
1971**	16,179	236	68.6	1,511	14	107.9
1972	16,566	234	70.8	1,940	37	52.4

*Lake vs. river catch rates should not be compared since the lake census extends for seven months and the river census only two and one-half months. However, the data suggests the trends of each fishery.

**A more intensive census commenced on Lake Pend Oreille in 1971 and would account for the increase catch data from previous years.

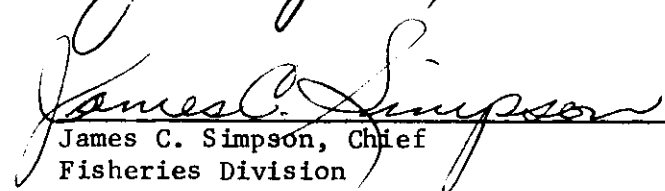
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